THE GLASS INDUSTRY

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# *Concerning the People Who Make Glass*

IN THE GLASS INDUSTRY, as in all phases of industrial life, People are more important than anything. People to make moulds, to tend machines, to draw designs, to prepare batches, to operate furnaces, to sell, to handle shipping problems, to conduct research and to supervise and manage operations so that profits are forthcoming which assure the industry's development and progress.

The glass family has increased substantially during the past ten years—its members currently exceeding 85,000 as compared to 42,000 in 1932. The earnings of this group have expanded even more spectacularly, rising from $40,000,000 in 1932 to $138,000,000 in 1942, according to Government payroll statistics. In other words, its employment has more than doubled and its payrolls more than tripled.

The average worker in the glass industry has shared in the industry's progress. Average hourly earnings rose from 47.8 cents in 1932 to 89.3 cents in May 1943, boosting average weekly earnings to $37.04 as compared to $18.73 in 1932 with only a 4 hour increase in the working week; in May 1943 glass folks worked an average of 41.5 hours per week while in 1942 the average was 37.3 hours.

For a number of years, previous to the war, 4 out of every 5 members of the glass family were men. This was due to the fact that most of the jobs in a glass plant involved considerable manual labor and close contact with forming machines, tanks, lehrs and other hot equipment. Since the war, however, women have taken over a number of these jobs to release their fighting men so that today, in most plants, we find almost as many women employed as men. Much credit for the continued production of glass in large quantities during this trying period must go, therefore, to the women.

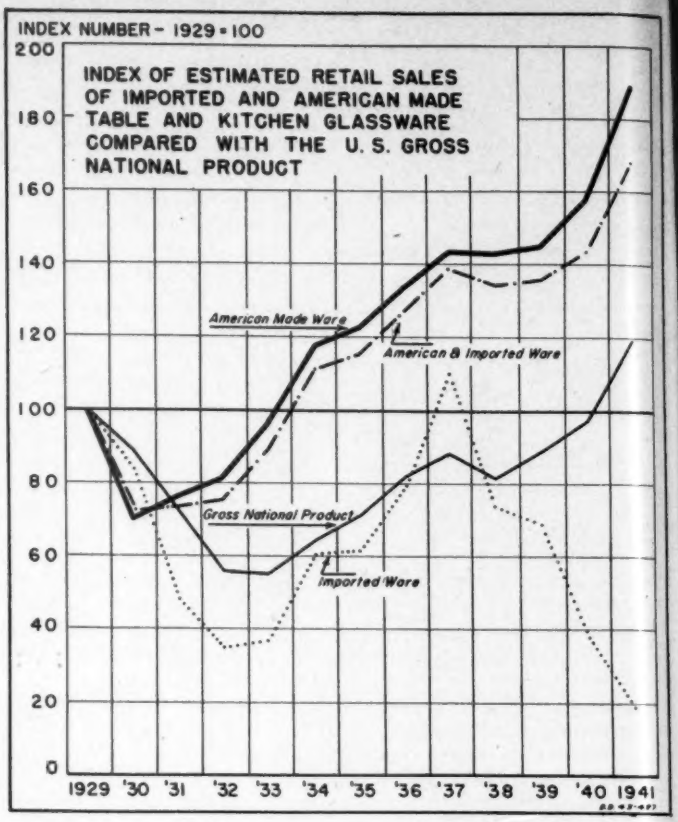
Despite the many hazardous jobs performed by Glass People, their low accident rate places them in fourth place in a list of 31 major industrial groups. Credit for this outstanding record is due to the constant vigilance of workers, supervisors and management, and the continual improvement in working conditions developed through the combined efforts of all glass folk. Between 1929 and 1940 the glass industry experienced a reduction of 43 per cent in the frequency of its accidents and a 46 per cent reduction in their severity. Since that time glass people have suffered only slightly from the general increase in the frequency of accidents due to war conditions; the rate in all industries was 8 per cent higher in 1941 than in 1940 while the glass rate was up only 3 per cent. An even better record was attained in the severity of accidents with a drop of 45 per cent among glass workers as compared to an 8 per cent decline in all industries.

The Department of Labor has stated in one of its reports "outstanding in the history of industrial relations in this country is the contractual relationship between organized workers and organized employers in the glass industry." This is a well deserved tribute to the cooperative spirit which has always existed among Glass People whose roots stem back to the days when they were highly skilled craftsmen who utilized the bargaining advantages intrinsic to their skill to obtain satisfactory working agreements. As the technique of glass manufacture changed from hand to machine operation, glass folks began to lose their "craft" advantages. They soon solved this problem, however, by changing their organizational methods and procedures which included the removal of the craft requirement for membership and the apprenticeship regulations.

Four out of every five members of the glass family are affiliated with either the American Federation of Labor or the Committee for Industrial Organization. Those belonging to the American Federation of Labor are affiliated with either the American Flint Glass Workers' Union, the Glass Bottle Blowers' Association or the Window Glass Cutters' League of America. The 24,000 members of the American Flint Glass Workers' Union produce tableware, illuminating ware and miscellaneous pressed and blown glassware articles. The Glass Bottle Blowers' Association consists of approximately 20,000 glass folks who produce containers. Most of the highly skilled people who cut flat glass as it issues from the machines belong to the Window Glass Cutters' League which has a membership of about 1,600. The 23,000 glass folks who belong to the Committee for Industrial Organization are members of the Federation of Ceramic, Glass and Silica Sand Workers. Most of them are flat glass workers who were formerly with the Federation of Flat Glass Workers of America which became the nucleus for the new larger group.

From the foregoing it is not difficult to understand why glass has been able to play such an important wartime role and why it is considered the most promising material for the Postwar World. As we said at the beginning, People are more important than anything, and—Glass Folks being what they are—no wonder glass is going places.

# WHAT ABOUT POTTERY AND GLASSWARE AFTER THE WAR?




**By EDWARD J. DETGEN**

**Chief, Specialties Unit, Bureau of Foreign and Domestic Commerce**

The Department of Commerce recently published "Markets After the War—An Approach to Their Analysis," which was designed to assist American business men in setting their sights on a common goal of postwar opportunity. This report pointed out that in the postwar era the Nation's total output of goods and services (the gross national product) would have to approach $165 billion, in terms of the 1942 general price level, if we are to avoid serious unemployment problems. This would represent an increase of 38 per cent over the 1941 total of $120 billion. What will be the impact on the table and kitchen pottery and glassware industries—producing such items as *cups, saucers, plates, casseroles, tumblers, bowls, crockery, and cooking utensils*—of this high volume of goods and services, which we will refer to from here on as the postwar gross national product? Furthermore, what should be the goal of the pottery and glassware industries if these groups are to contribute their share to high levels of employment?

One method of analyzing this situation is to study the past relationships of pottery and glassware sales to the gross national product. As the accompanying chart indicates, these have been close over a period of years. On the basis of these close relationships and assuming a postwar gross national production of $165 billion, we should expect the retail sales volume of table and kitchen pottery and glassware to soar to $313 million—an increase of 39 per cent over the estimated 1941 volume.

This article, which points out some of the factors which must be considered in appraising this market, is intended to serve as a stimulant to postwar thinking on the part of pottery and glassware producers and dealers and to encourage the development in detail of plans for peacetime. To assist those interested in the subject, the Bureau has prepared a booklet (available on request to the Specialties Unit) which contains more detailed information on the pottery and glassware business.

## Pottery

On the basis of their past relationships to the gross national product, we estimate that sales of table and kitchen pottery in a postwar period of high levels of employment might reach in the neighborhood of $196 million, or 51 per cent more than in 1941. In appraising the validity of these figures perhaps we should first ask if this volume is reasonable from a consumption standpoint.

In normal times, probably 30 per cent of the pottery sold in the United States is used in hotels, restaurants, dining cars, and other commercial eating establishments; the remainder is sold to household users. If this ratio is maintained in the postwar period, sales to commercial users would have to increase from $39 million in 1941 to $59 million in the postwar period, while household

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sales would have to increase from $90 million in 1941 to $137 million. Breaking down the household figures, we obtain an indicated annual family expenditure for pottery of $3.43 in the postwar era, compared with $2.43 in 1941 (assuming 37 million families in 1941 and 40 million families in the postwar period); in other words, the average American family would have to spend about a dollar a year more for pottery. This increment might be realized by expanding the volume of ware sold or by enlarging the market for quality ware.

Next, we might turn to the supply angle of this problem and discuss the industry's ability to produce such a volume. We know that the 1941 output was reached only after straining the pottery industry's productive facilities to the maximum. This suggests a study of the problems involved in expanding manufacturing facilities, obtaining sufficient skilled labor, and providing necessary raw materials. It should be remembered, however, that a sizable portion of the 1941 activity in our domestic pottery industry was due to the sharp decline in imports, which represented 14 per cent of the total in that year as compared with a normal ratio of close to 30 per cent. This leads to consideration of the international complexion of the pottery trade, which has always been a matter of real concern to this industry. If we assume that the 1939 ratio of imports to consumption (20 per cent) is maintained, the American pottery industry's portion of the postwar market might total $156 million, compared with about $168 million at the 1941 ratio of imports to consumption (14 per cent).

The likelihood of the demand reaching our target figure is another point to discuss. This involves, of course, an appraisal of the reasonableness of our basic assumption that a high level of employment will be achieved in the postwar period. One of the best answers to this was provided in a recent discussion with some business people who replied that American business must see to it that this high level of employment is obtained.

The trend in pottery sales has always followed very closely the trend in general business activity in the country, so if the general business activity increases it is up to pottery manufacturers and dealers to see that they get their share of the consumer dollars which will be available; at the same time, they will be contributing their share to achieving the postwar gross national product. Again, we must stress the fact that the portion of the total sales which will come from American potteries is dependent to a considerable extent on the trend in imports. It is true that this in turn depends on our tariff policies, but careful study should be made of the other factors contributing to foreign competition, such as a popular notion that imported is better than domestic ware. American pottery manufacturers might consider a more vigorous promotional campaign in behalf of their ware.

No attempt can be made here to discuss the various technological developments which might occur in the postwar period. Many industries have devised new techniques, new materials, and new uses for materials which may or may not affect the pottery situation. New uses may be developed for pottery, while new products may be offered on the market to compete in normal pottery fields. Furthermore, the entire question of potential export markets has not been mentioned—a subject which merits great attention as American pottery becomes more exportable owing to lower production costs achieved through mechanization of manufacture.

### Glassware

Sales of table and kitchen glassware in a postwar period of high levels of employment may reach $117 million, or 22 per cent more than 1941's record volume. This estimate is based on the assumption that the high rate of employment will generate a gross national product of $165 billion (38 per cent more than in 1941) and that the glassware industry obtains the same proportion of the Nation's total income which it did in pre-war years.

Total sales volume of $117 million does not seem unreasonable from a consumption standpoint. Normally, about 40 per cent of the glassware sold in the United States is used in commercial eating and drinking establishments, such as hotels, restaurants, bars, soda fountains, and dining cars; the balance is for household use. If we assume that this ratio is maintained, sales of

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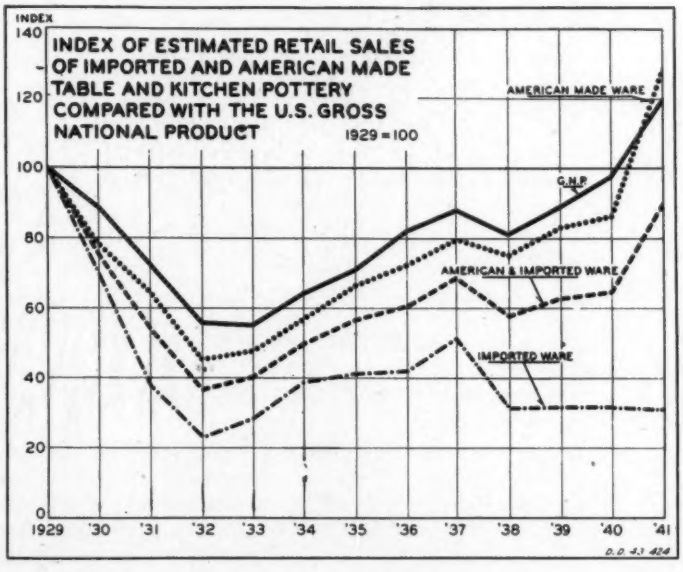
### NEW GLASS INSTITUTE

Although details are lacking as this issue of THE GLASS INDUSTRY goes to press, it is reliably reported that a new glass research institute is in the process of organization. The new institute is being sponsored by the Eastman Kodak Company, Corning Glass Works, Bausch & Lomb Optical Company, American Optical Company and the Pittsburgh Plate Glass Company. Dr. Woldemar A. Weyl, who for a number of years has been connected with the Ceramic Department, Pennsylvania State College, has been chosen to head this new organization. THE GLASS INDUSTRY understands that the activities of the institute may not be confined solely to optical glass but rather will cover a broader range of glass research.



# THE IDENTIFICATION OF PLASTIC MATERIALS

While plastics are not the direct concern of the glass technologist, indirectly they are of interest as a competitive or secondary material. As the various types of plastic materials in use are very numerous it is sometimes quite difficult to identify a particular type from others especially by those who are not familiar with the plastic field. H. Nechamkin (Ind. Eng. Chem. Anal. Ed., 1943, 15, 40-41) has recently outlined a schematic procedure for the identification of common commercial plastics that should be of help to the glass technologist who is called upon to identify a plastic material.

There are three definite phases involved in the basic method recommended. Each analysis is made on the basis of the reaction of the plastic when subjected to the flame.

The recommended procedure is as follows: the plastic, in strip or rod form if possible, is held at one side of a Bunsen flame until it takes fire but not for more than 10 seconds. The following scheme is then consulted:

I. No flame is produced. The article retains its shape. The odor of formaldehyde is present in all cases.
   A. No other odor: urea formaldehyde.
   B. Strong fish-like odor: Melamine formaldehyde.
   C. Phenolic odor: phenol formaldehyde.

II. The burning plastic extinguishes itself on removal from the Bunsen flame. Specimen held just to edge of flame.
   A. A green zone is produced.
      1. Odor of burnt rubber
         (a) Green area pronounced: pliofilm.
         (b) Green area small and over-shadowed by yellow: Neoprene
      2. Odor acrid but not that of burnt rubber: vinyl chloride derivative.
      3. Odor sweet, heavy black ash: vinylidene chloride resins.
   B. Odor of burnt milk protein: casein.
   C. Sparks from flame of burning plastic and acetic odor: cellulose acetate.

III. The plastic continues to burn after removal from the Bunsen flame. Flame is examined for color during the first second of burning.
   A. Burning very rapid and intense white flame.
      1. Odor of camphor: celluloid.
      2. No camphor odor: cellulose nitrate.
   B. Flame predominantly blue, may have a small white tip.
      1. Very strong sweet floral fruity odor: methacrylate.
      2. Odor reminiscent of burning vegetation or fresh celery. Flame is almost entirely blue. The resin is soluble in aqueous 60 per cent (by volume) hydrochloric acid: nylon.
      3. Weak very slightly sweet odor: polyvinyl formal.
      4. Odor of rancid butter or cheese.
         (a) Sparks produced from flame of burning plastic: cellulose acetobutyrate.
         (b) No sparks, burning smooth and steady: polyvinyl bukyral.
   C. Flame surrounded by bright green mantle, odor of burnt rubber: pliofilm.
   D. Flame surrounded by a purple mantle, sparks and an acetic odor: polyvinyl acetal.
   E. Flame yellow-white and luminous.
      1. Odor of butyric acid: cellulose acetobutyrate.
      2. Odor of burnt milk protein: casein.
      3. Sweet floral odor (marigold), flame smoky: polystyrene.
      4. Weak, very slightly sweet odor: polyvinyl formal.
      5. Odor of burnt paper: cellulose.
      6. Odor of burnt rubber, flame weak, small green mantle overshadowed by yellow. White flashes may appear in the flame: neoprene.
   F. Flame surrounded by yellow-green mantle.
      1. Burns with difficulty and sparks, producing an acetic odor. The melted burning plastic, when allowed to drip into water, produces heavy black-brown foamy granules or flakes: cellulose acetate.
      2. Burns readily, once started, producing a slight sweet odor. The melted burning plastic, when allowed to drip into water, produces flat discs which are light tan when the plastic is clear, or not very different in color from the original plastic when the plastic is colored: ethyl cellulose.

The same resin may occupy more than one position in the scheme. In most cases the odors are so intense that rather cautious smelling is advised. To determine the odor of the vapors produced, the flame should be blown out immediately upon removal from the Bunsen flame. No valid conclusions can be reached from smelling the plastic while it burns. In all cases it is advisable to have specimens of the various plastics available for comparison of the tentatively identified unknown material with a known specimen.

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• The National Safety Congress will meet in Chicago on October 5, 6, and 7 and will devote its program exclusively to accident problems which have a direct bearing on the prosecution of the war and winning it. The sessions will cover problems that confront all industries, with a Labor and Safety Session on October 7, one of the outstanding features for industrial leaders.

# SHIPPING CONTAINER SHORTAGE

## —*Glass Industry's Most Urgent Problem*

Harold W. Boeschenstein

**Fibreboard soon will be classed as a critical material; priorities system expected to give way to allocations; drastic efforts being made to increase pulp production, salvage container waste; Boeschenstein named pulp and paper Czar.**

Shipping cartons have moved into first place among the immediate problems of the glass manufacturing industry. A shortage of fibreboard, predicted early this year and actually *fait accompli* during August, may reach the proportions of a national crisis before winter. For the supply has dwindled to a hand-to-mouth basis, and even the war can't go on without wood pulp. Once before the country had a fibreboard scare which proved abortive; this time it's the real McCoy.

Statistically, observers estimate that current demand exceeds production by as much as a million tons on an annual basis. At this moment of writing, every Government agency having a finger in the pie is seeking some way to get more wood out of the forests and more waste paper to make up this deficit. A coordinator has been named; campaigns are under way to cajole men back into the timber. Canada has been approached. But it is doubtful at best if these plans will get far quickly—they involve war manpower, prices and politics—hurdles of such magnitude take a long while to straddle. So the glass industry may as well face the inevitable—curtailment.

In fact, the machinery for curtailment actually is being set up. One is rash indeed, who would predict an order before it is written. However, the general thinking seems to anticipate an order paralleling tin plate. Starting with known estimated totals of 1944 pulpwood and wood pulp production, containers will claim a certain percentage of the anticipated supply. Of the container claimants, the Army, Navy and food will probably get all they need, other claimants sharing what is left. Then it will be up to WPB to allocate production among the fibre container manufacturers, each one applying for his needs on an appropriate form. This plan, or one like it, is what the glass industry and its customers will encounter.

There are many factors in the situation that need elucidation. If the paperboard boys were wrong in proclaiming a shortage back in 1941, why are we so sure they are not crying "wolf" this time? Why do we think the hope of increasing production is mere optimism? What happened to the paper salvage campaign, and is it a worthwhile effort? It will be the purpose of our remaining paragraphs to discuss the factors involved in the fibreboard and shipping container situation and to try to give a clear, but abbreviated, picture of the whole.

### The 1941 Scare

Many are still overly conscious of the anticlimax in 1941 when an acute April shortage tapered off until by October it had become an oversupply. Having been fooled once, these hesitate to accept the present situation as at all critical. Because there are many in this school of thought, it is most important to establish the differences between the speculative construction of the 1941 market and today's exhaustion of *raw materials*.

Around the first part of 1941 there was persistent talk of shortages of various goods and materials, and this was particularly true of paper and paperboard. Thus, speculative purchasing was superimposed upon the demand caused by the rise in general industrial activity due to defense spending. Inflation of the paper and paperboard market was further accelerated by a scrap collecting campaign that was instituted shortly thereafter. About 60 per cent of the fibrous raw material going into the production of paperboard is derived from scrap—old newspapers, rags, straw, etc.—and as new plants and idle machines were put into operation for the manufacture of paperboard, new supplies of waste paper became

DOMESTIC PAPER AND PAPERBOARD PRODUCTION BY MAJOR GRADES

(Short Tons)

| GRADES | 1942 First Half | 1942 Second Half | 1943 First Half |
|---|---|---|---|
| TOTAL ALL GRADES..... | 8,843,278 | 7,871,298 | 8,398,594 |
| Newsprint* ..... | 492,060 | 473,810 | 416,570 |
| Groundwood, etc. ..... | 347,553 | 276,094 | 289,982 |
| Book ..... | 928,982 | 782,724 | 819,407 |
| Fine Papers ..... | 556,063 | 493,867 | 511,958 |
| Wrapping Paper ..... | 1,376,078 | 1,129,224 | 1,140,766 |
| Special Industrial ..... | 95,038 | 85,226 | 89,795 |
| Sanitary ..... | 419,135 | 392,437 | 413,259 |
| Tissue ..... | 93,797 | 77,299 | 81,243 |
| Absorbent ..... | 30,942 | 33,367 | 39,595 |
| Building Papers ..... | 397,065 | 512,946 | 424,709 |
| Other Paper ..... | 18,402 | 2,984 | 436 |
| Boards ..... | 4,088,163 | 3,611,320 | 4,170,874 |
| Container ..... | 1,974,575 | 1,754,126 | 2,006,376 |
| Tube ..... | 81,030 | 83,645 | 137,391 |
| Folding ..... | 909,746 | 799,155 | 1,004,415 |
| Set-Up ..... | 557,225 | 407,737 | 436,805 |
| Cardboard ..... | 30,732 | 23,231 | 26,368 |
| Building Boards ..... | 405,068 | 452,097 | 453,814 |
| All Other Boards ..... | 129,787 | 91,329 | 105,705 |

*Newsprint figures given here do not include importations from Canada and Newfoundland. These figures are not available; but as it is known that newsprint relies upon the domestic supply for only one quarter of its requirements, the total 1942 consumption may be closely estimated at 2,000,000 short tons.

imperative. With the entire country—consumer and industrial user—conscious of a paper shortage, the trend to "stock up" became further intensified.[1]

Early 1942 production of all kinds of paper was the largest in history, exceeding 100 per cent of the industry's rated capacity, which was then being operated on a three-shift, six-day basis.

We will not pursue the trend of paper and paperboard production into further cycles, including the period during July of 1942 when production had far surpassed demand. But it is important to make note of two factors in the situation which permitted production to spiral to such dizzy heights.

The first factor was a reserve of pulpwood and wood pulp. Although all importations of pulp from the Scandinavian countries had been shut off since the beginning of the war and there had been a substantial drain on the stock pile, the inventory position was still relatively high. By contrast, our reserves today approach a minimum operating basis. While the Government has not released its detailed figures in proof of this, it has reported that from June 30, 1942 to June 30, 1943, pulpwood inventories dropped 32 per cent, while receipts by U. S. mills (including imports) during the past year were 26 per cent below the preceding year. Wood pulp production in the first six months of this year dropped 17 per cent below the 1942 six-month period. The very high rate of paper production during the first six months of 1943 was maintained only by drawing upon our reserves of cut wood and pulp. Stocks of certain grades of pulp are down to a 20 days' supply,[2] contrasted with a normal figure of 90 days.

The second factor which contrasts the situation then with today is manpower. The war machine had only begun to draw lumbermen from the forests into war work. Stock piles could be replenished; if not fully, at least to a substantial degree. Today this is not possible —but this situation will be dealt with presently.

### A Million Tons Short

Our 1943 production of wood for pulp will be substantially under last year. Total production in 1942 was a little more than 11,660,000 tons, including foreign importations, and the best estimates of the pulp and paper industry place the current year's production at nearly two million tons under this figure. Offsetting this two million-ton deficit, various conservation measures have reduced consumption by one million tons. Thus we are still a million tons short. In that one sentence is summed up the whole paper situation that exists today.

What are the possible remedies?

**1. Cut more timber.** There is no shortage of pulp making or paperboard capacity. The mills are not running at their maximum by any means. Although the mills are experiencing labor and other difficulties, the same as anyone else, their prime need is more pulpwood. Excluding scrap, which is still another problem, the only source of pulp is of course the forest—our own forests, and those of Canada and Newfoundland.

Labor is the prime difficulty here. The pulp and paper industry estimates that an additional 20,000 men would be sufficient to cut enough additional timber to supply all pulp requirements.

How is it going to get them?

Two major drives are under way to get men back into the forests. One is by the War Activities Committee of the Pulpwood Consuming Industries; the other by the American Newspaper Publishers Association. Both are largely exhortative; both appeal strongly to the farmer (40 per cent of the supply comes from farms); the central theme is to "cut wood as a contribution to the war effort." Supplementing these efforts, the Government has listed pulpwood as an essential industry, and the War Manpower Commission, together with the United States Employment Service, have promised to transfer back to the forest woods workers now employed in other industries. In the South, Negro workers are being urged to work a full six days instead of their usual four to five.

It will be observed that all these campaigns are persuasive. To gauge how successful the persuasion may turn out to be, one must consider the opposing factors. Wood cutting is one of the most strenuous, as well as unattractive, forms of labor. Wages paid are well below the level of many war occupations. Other war industries, such as agriculture, are rated higher in the scale of essentiality, and their requirements must first be met. One must always remember that the War Manpower Commission will scrutinize thoroughly a situation before it diverts employment to it. Before it releases labor from airplane manufacture, munitions, shipbuilding, agriculture—to list but a few occupations where manpower is desperately needed—it will ask of the paper and pulp industries: have you put your house in order? The question is pertinent: Are all the uses to which pulp is being put necessary?

There has been some talk of using prisoners of war in the woods. This has been declared permissible. But the guarding of prisoners in woodland country presents problems; more guards are required, and no guard relishes the job of watching a prisoner swing an axe which might at any moment innocently fly out of his inexperienced hands. Moreover, before a prisoner of war could be used in wood cutting, procedure requires that clearance must first be secured from local U. S. Employment Offices to make certain there is no available supply of free labor.

Another phase of the labor problem is OPA. Price ceilings prevent the payment of wages that will induce men into the forests. Interestingly enough, OPA is being cooperative. During July and August it issued a number of maximum price regulations lifting local ceilings on pulpwood. Of course, these price increases were not sufficient to do much good; but at least they were indicative of an awareness of a national crisis.

So far we have dealt only with domestic production. Canada and Newfoundland contribute highly important percentages of our pulpwood and wood pulp supply, though most of it reaches us as newsprint rather than the pulp itself. Under the terms of the Hyde Park Agreement, the resources of Canada and the United States are considered in the war effort as belonging to a single country. But there is a growing feeling in this country that Canada, aided and abetted by our newspapers, is not playing ball with her pulp supplies. For example, on February 20, WPB called off a further 10 per cent cut in newsprint because the Canadian Pulp and Paper Administrator had informed it the night be-

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# FUEL CONSERVATION—TOPIC OF JOINT MEETING OF GLASS MANUFACTURERS AND WPB

The conservation of natural gas supplemented by mandatory curtailment schedules during the critical months of December through March was discussed by glass manufacturers and War Production Board officials on August 10 in Clarksburg, West Virginia, and August 12 in Pittsburgh, Pennsylvania. John R. Hostetter, chief of the Glass Unit, Inorganic Chemicals Division of the War Production Board, presided at both meetings.

The meetings were attended by manufacturers of glass products other than containers in the Appalachian area. C. C. Young of the Natural Gas Division of the Office of War Utilities, who led the discussions, emphasized the seriousness of the fuel situation to all industries which are large consumers of natural gas.

Approximately four hundred billion cubic feet of gas is consumed annually in this area. About 65 per cent of the industrial consumption goes into steel production.

The War Production Board officials pointed out that glass manufacturers will have to reduce their use of gas substantially during periods of peak demand. Gas conserved voluntarily by the glass industry will tend to reduce mandatory curtailment schedules by delaying depletion of storage pools, held in reserve for peak days.

The possible annual shortage of natural gas in the Appalachian area is estimated at about 12 billion cubic feet, WPB officials said. One of the most disconcerting factors is the suppliers' difficulty in building reserves. The lack of reserve fuel will be doubly critical in the latter winter months, since underground storage may not be sufficient to maintain high enough pressure all winter.

Glass manufacturers said that a large cut in their peak period fuel consumption in some instances would necessitate plant shut-downs. It was stated by one manufacturer that while glass could be held in a molten state with only 50 per cent of normal fuel requirement, his glass would be useless for the purposes intended because the crystal type used would lose color.

The glassmen sought advice as to how they might use standby equipment. Some held that before intelligent voluntary curtailment in natural gas could be effected by them, they would have to know to what extent standby facilities burning fuel oil, propane or butane gas could be employed.

No attempt was made finally to answer this question, since the purpose of the meetings was exchange of ideas, without attempting definite conclusions. However, the War Production Board and the Office of War Utilities are endeavoring to find every possible means of alleviating the situation.

As a starting point, they recommended three measures which might be considered by the glassmen in relation to their individual situations.

First, it was suggested that affected glass plants endeavor to convert to coal. Secondly, that maximum use of standby systems be considered, where they now exist. Perhaps the most feasible measure which could be taken to offset fuel shortage, to which the glassmen must adjust, is the shut-down and repair of individual tanks during critical months, it was held.

It was agreed that conversion to coal does not seem to hold much promise of easing the situation in time. A number of plants have standby systems, but there is no assurance that the necessary fuels will be available when most needed.

Tank repairs may be the answer for some plants, it was asserted. Several have already made arrangements to undertake this work during the cold weather months. How broadly the practice can be employed depends almost entirely on the necessity for such tank furnace rehabilitation, WPB officials said.

It was pointed out that the demand this year for natural gas should be approximately the same as in the 1942-1943 period. However, there are two problems involved. An annual shortage and a peak-day shortage. These factors are closely related since peak-day shortages occurring during the four-month critical period may be influenced by annual shortages, due to insufficient gas in underground storage.

It was stated that even a 50 per cent peak-day curtailment might prove to be insufficient to provide enough gas to meet demands of plants turning out guns, ammunition and other war goods.

Glass manufacturers who attended the informal Pittsburgh meeting have submitted proposals to Mr. Hostetter incorporating specific plans for natural gas conservation in their plants. Further consideration will be given these proposals when all returns are analyzed and facts are tabulated.

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## GLASS DIVISION MEETING IN UNIONTOWN, PA.

The fall meeting of the Glass Division of the American Ceramic Society will be held on September 15th and 16th at the Summit Hotel, Uniontown, Pa. The complete list of papers to be presented is unavailable as this issue goes to press, however. The GLASS INDUSTRY has been advised that the following papers are scheduled:

"Regenerator Refractories" by W. F. Rochow, Harbison-Walker Refractories Company

"Electronics in the Glass Industry" by H. C. Steiner, General Electric Company

"Calculation of the Surface Tension of Glasses" by K. C. Lyon, Armstrong Cork Company Millville, N. J.

"Analysis of Batch for Segregation" by Herbert J. Hunt, Kimble Glass Company

"Nickel Silicates and Glass" by Mellen A. Knight, Preston Laboratories

Report of A.S.T.M. Committee C-14 on Glass.

In addition to the usual presentation of papers there will be a discussion on Batch Making, Batch Handling and Batch Control. S. R. Scholes will lead the discussion and Herbert J. Hunt will present his paper on batch segregation in conjunction with this discussion.

A golf tournament has been arranged and will be in charge of Dr. Scholes.

Southern Exposure of Test House

# SUN-EXPOSED GLASS WALLS PROVIDE TEST FOR SOLAR HEATING

**Large glass areas and solar architecture indicate possibility of sun-ray heating in post-war homes**

The study of the principle of "insolation" or the design of buildings utilizing large areas of glass for comfort purposes was made possible by a test recently completed by the Illinois Institute of Technology. The project was financially supported by the Libbey-Owens-Ford Glass Company. The house was built in the latitude of Chicago and was occupied throughout the test period by the owners, a young married couple. Recording instruments, supplemented by periodic visits and observations by members of the Institute, provided the records of solar radiation functioning as a source of living comfort in the home.

The primary objective of the Institute was to measure, if possible, the contribution of solar auxiliary heating to the comfort of the occupants and its effect upon the cost of fuel. Interest was also centered in the performance of the floor radiant heating system, the interrelationship between natural and mechanical heating methods, and the general desirability of the house design.

The house tested was a one-story frame structure with single-slope, flat-pitched roofs over the main body and wings. These roofs were extended along the principal facade facing south to form wide eaves carefully related to the latitude and the position of the windows so that they fully shaded the windows during the summer months, when the latitude of the sun is high, and permitted the low-hanging winter sun to penetrate deeply into the principal rooms.

The frame walls and roofs were insulated with a stitched and creped expanding fibrous blanket faced on the inside with aluminum foil and an enclosed air space. All moveable windows were weather-stripped; all windows, whether moveable or stationary, were double-glazed with metal-sealed, compound glass having a ¼" dry air space between the two panes.

Various records were kept throughout the entire calendar year. Temperatures were measured both inside and outside on the north and south side of the house

continuously by single-chart thermometers. The amount of gas used for heating was metered, and the relative humidity was measured continuously indoors and outdoors. Periodic comparative readings of the energy radiated from the sun were made indoors and outside by means of a sensitive thermopile and galvanometer. Periodic readings of indoor illumination intensities and general observations of daily weather conditions were also made.

Although a number of critical and unexpected variables were discovered after the program was established which prevented the reduction of observed conditions to quantitative values, nevertheless it is felt the study should prove interesting and perhaps fruitful to those concerned with the use of glass in solar auxiliary heating, mechanical heating by radiant methods and the interrelationships of the two methods.

The owners reaction to increased sunlight was a pleasant one and they were enthusiastic proponents of solar auxiliary heating by means of large window areas. A significant observation was the difference in temperature between the living room which has large glass areas across the entire south facade and the bathroom which has only very small windows near the ceiling on the north side of the house. The glassed-in area is not as effective a barrier to the outside air heat as the walls. In addition, there may be some reflection of radiant heat from the sun through the glass areas other than the normal re-radiation of that heat at wave lengths to which glass is relatively opaque.

While natural illumination was not recorded in detail, periodic observations showed that high levels of illumination prevailed throughout the house in daytime, due to the size and disposition of the windows. At no time was artificial light required in any part of the house, no matter how remote the windows, during the daylight hours. However, when snow was on the ground during sunny days, the light was so intense that glare through the south windows caused some eye strain until the owners installed draperies for the windows to control the excessive light when necessary.

The following general conclusions seemed to be justified by the Institute after their year's experimentation:

1. No definite quantitative measurements can be derived from the test.

2. The owners found the basic design of the house and the use of large window areas eminently satisfactory. They enjoyed the extra "free" natural illumination these windows afforded, the pleasurable sense of basking in warm sunlight on cold winter days, and the sense of spaciousness attributable to the broad outlook through the entire south facade of the house.

3. The owners found the large windows required curtains to control glare when sunlight reflected from snow on the ground and in summer they experienced somewhat higher peak temperatures in the rooms with large glass areas than in other rooms with limited glass areas.

4. The combination of radiant heating through floors having a high heat capacity and auxiliary heating by solar radiation proved unsatisfactory to the extent that possible and expected fuel savings due to solar heating were not fully realized, and indoor temperatures rose above the comfort level.

**Sun rays extending into living room during Winter.**

5. A house of similar design equipped with a heating system better adapted to fully utilize the available solar heat input should show a substantially lower heating cost than that recorded in this test.

6. The preponderance of evidence indicates that the solar heat input in the test house offset most, and probably all, of the heat losses through the extra window areas and kept the total heating cost at a reasonably low figure.

## PAPER CUP COMPETITION

The encroachment of paper drinking cups on the glass tumbler in the soda fountain field was further emphasized by an announcement in a recent issue of News Digest, propaganda organ of The Public Health Committee of the Paper Cup and Container Institute. The item reads as follows:

"Paper Cups Decreed Effective July 1st": All soda fountains in Augusta, Georgia, were ordered by the Richmond County Board of Health to serve all drinks in paper cups. According to last reports, operators appear to be "falling in line" satisfactorily with the new ruling which health officials felt necessary to eliminate the unsanitary conditions prevalent at many fountains. Operators blamed these conditions on the large turnover in employees and the inability to hire trained help. Dr. C. A. Henderson, Health Commissioner, revealed that Charleston, Savannah and other neighboring cities are interested in this step forward toward health protection, as evidenced by inquiries received. Dr. Henderson cautioned citizens to observe the same precautions in their homes as is required of the soda fountains in regard to the "common drinking glass."

While the mandatory use of paper cups instead of glass in one city of 66,000 population may not be cause for alarm on the part of glassmen, however the action may be indicative of further trouble ahead. It may be well for those glass manufacturers concerned to give some attention before it is too late to the problem of combating the type of competition being employed by the paper cup industry. It is costly and difficult to recapture lost markets.

# INVENTIONS AND INVENTORS

**A Summary of U. S. Patents Issued During July and of Patent Applications Recently Vested by The Alien Property Custodian.**

### Compositions

George E. Barton of Millville, N. J. received patent 2,323,643 for glass compositions intended to produce containers having improved chemical durability. He purposes no new oxides but a reshuffling of the old ones. His results are produced within the normal working range of temperature by the following compositions:

| | Overall range Per cent | Preferred range Per cent |
|---|---|---|
| Silica ($SiO_2$) | 69 to 72.5 | 70.5 to 72 |
| Lime ($CaO$) | 10 to 12 | 10.5 to 11.5 |
| Alkalies ($Na_2O + K_2O$) | 13 to 14.5 | 13.6 to 14.2 |
| Alumina ($Al_2O_3$) | 2.4 to 4.2 | 2.4 to 2.9 |

In addition to these constituents the new glass compositions contain 0.4 to 1.0 per cent or more of boric acid and of barium oxide.

Accelerated weathering tests are said to show only twenty to thirty per cent as much attack as with the usual container glasses, and actual storage tests have shown even greater advantages.

Mr. Barton assigned the patent to Armstrong Cork Co.

### Miscellaneous Processes

Etching processes are described in patents 2,324,694 granted to Carl W. Gustkey of Wheeling, W. Va. (Imperial Glass Co.) and 2,324,087 granted to Edwin E. Jelley of Rochester, N. Y. (Eastman Kodak Co.). Gustkey's patent merely concerned means of setting up a pattern to be traced through the wax covering a glass article to be etched. The pattern is set up with a light source behind it which will cast an outline on the glass article so that a stylus may be directed manually along the pattern to remove the wax along lines where it is desired that the etching fumes shall be effective.

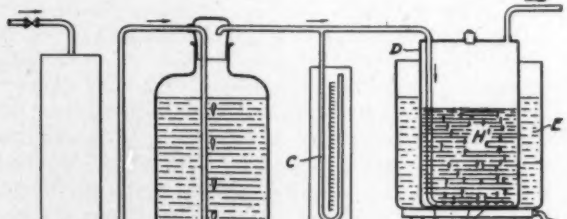



**Fig. 1. 2,324,087: Jelley. Etching vapors laden with hydrofluoric acid from tank H are previously saturated with benzene in vessel B, because this gives greater protection to the wax surfaces of an article which is to be etched.**

The Jelley patent is directed toward eliminating the loss of ware caused by the etching agents seeping through the wax coating. If, for example, vapor of hydrofluoric acid is being used the resistance of the wax is not permanent, and unless close control is exercised it may find its way through the thinner wax areas before the unprotected areas have been etched to the required depth. Mr. Jelley has found that the addition of hydrocarbons to the hydrofluoric acid vapor will prevent or at least retard its penetration through the wax. This is because the hydrocarbon forms a film on the wax and enters the interstices of its structure. Less accurate control is then necessary and fully etched clean lines may be obtained consistently.

The hydrocarbon cannot be a solvent for the acid since instead of making the wax less permeable it would conduct the acid through it. Suitable hydrocarbons are gasoline, butane, benzene, and pentane. Requirements are for a boiling point below 200° C, and preferably about 60° C, inertness to the acid and the wax, and the property of being adsorbed by the wax.

A method by which the hydrocarbon may be entrained into the acid vapor stream is shown in Fig. 1. Air dried by passing through vessel A containing anhydrous calcium chloride, is bubbled through the hyrocarbon such as benzene at B and then is passed by means of apertures into vessel D which is made of lead and contains a 60 per cent solution of hydrofluoric acid, H. The lead vessel is maintained at 20 to 40° C in a water bath. Air leaving the acid vessel will contain both benzene and acid and is suitable for carrying out Jelley's etching process.

Bernard Long of Paris suggested in APC 401,909 a number of methods of equipping foam glass with strength reinforcing elements. They may be wire mesh or expanded metal and may be wholly enclosed within the glass block or may have extending portions for use in applying the foam blocks. In a typical instance, where a foam glass block or slab is made by charging a mold with powdered glass and a gas generating substance which will foam up to fill the mold when heat is applied, the reinforcing mesh is dropped into the mold when only half of the charge is in place.

APC 275,989 applied for by A. G. C. Kirchheim of Aix La Chapelle, Germany, suggests means of preventing the deformation of glass blocks when two complementary halves are reheated and then pressed together to form the closed block. He forms the edges in the manner of Fig. 2 so that they will be made up of lips of lesser thickness than the main wall sections. When a force is exerted on these edges to press them against each other for assembling, the pressure per unit area of the ribs is greater than the pressure in the main sections, and the ribs readily deform so as to give intimate contact. Kirchheim claims that another advantage is that when

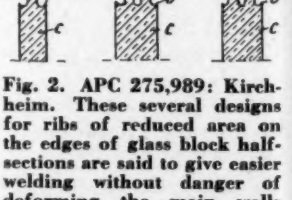



**Fig. 2. APC 275,989: Kirchheim. These several designs for ribs of reduced area on the edges of glass block half-sections are said to give easier welding without danger of deforming the main walls when pressure is applied.**

(*Continued on page* 395)

# Research Digest

**Practical Interpretations of Glass Technology**

### The Performance of Tank-blocks in Glass Furnaces

The Refractories Committee of the Society of Glass Technology has recently reported the data which had been collected by them during their study of tank block performance (Journal Society Glass Technology Proceedings, October, 1942). Data on the following subjects was obtained from furnaces melting soda-lime-silica glasses: 1 — furnace life in weeks, 2 — maximum and minimum amount of glass in tons melted in one full working week, 3 — type and composition of the glass, 4 — internal dimensions of the furnace melting end, 5 — size of flux line blocks, 6 — type of blocks, 7 — fuel employed, 8 — type of firing, 9 — melting temperatures, 10 — artificial cooling, 11 — cause of furnace shut-down, 12 — position of ports in respect to end and bridge walls, 13 — observations on effect of block corrosion on glass quality, 14 — opinion on the relative performance. This data is presented in tabular form and as it gives an overall picture of English furnace practice it should prove very useful to those American glass furnace men who are interested in making comparisons of American and English furnace practice.

The data has been subjected to both graphical and statistical analysis. The primary conclusion that can be drawn from this analysis of the data is that it is possible to represent in diagrammatic form a relation between furnace life and average rate of glass discharge in terms of weight of glass melted per week per square foot of melting area (provided the life figures are corrected to allow for variability in original thickness of tank blocks), and the statistical limits within which 19 out of 20 results will fall. Results outside these limits could be regarded as indicating a performance either better or worse than the commercially attainable standard and would direct attention to other causes for the different performance.

The graph connecting "corrected life" and rate of discharge correlates eleven furnaces out of sixteen belonging to seven glass works out of eight, and it can be either a straight line or a hyperbola. The latter possibly gives the more accurate representation, especially if extrapolation to extreme limits of furnace operation be considered. At the present stage of the investigation, such a graph, which assumes equal merit for all furnaces associated with it, appears to be a more satisfactory method of representing the performance of tanks than assigning a figure of merit.

Examination of further data on somewhat similar lines in the future will determine with greater certainty whether the proposed curves correlating "corrected life" and "rate of discharge" are a reliable guide to tank-block performance. (It is interesting to note that the committee expresses furnace pull in the terms of tons per square foot of melting area rather than in the terms of square feet of meeting area per a ton of glass. The latter method is used by many in America and its use has been recently criticized by an anonymous writer in the July, 1943 issue of THE GLASS INDUSTRY.)

### The Visual Spectrophotometry of Glasses, with Special Reference to Low Absorptive Glasses

The types of spectrophotometer designed primarily for the measurement of the light absorption of homogeneous glass are generally not suitable, without modification, for the measurement of low absorption (such as in the case of decolorized glass) especially in the case of glasses in which cords and strain are markedly present. Wang (Journal Society of Glass Technology, December, 1942) by a simple analysis shows that when using a small-sized source of illumination, such as the Pointolite lamp, the thickness of the specimen may have to be limited to 0.7 cm. On the other hand, if a broad uniform diffusing source is available specimens up to 13 cm. thick can be studied without causing serious error. By this means specimens in the form of rods and sheets can be studied by allowing the illuminating rays to be reflected internally.

An apparatus using the broad uniform diffusing light source is described and typical results obtained by its use given. Wang indicates that such a set-up is quite useful for studying glasses of low absorption such as is the case in the study of the decolorization of glass. Wang also points out that spectrophotometers such as the Hardy are well adapted to the use of thick glass specimens. (F. C. Flint in a paper on decolorization given before the last International Congress presented several transmission curves of decolorized glass in which the sample thickness was in the order of 23 mm. These measurements may have been made with the Hardy type spectrophotometer.)

### Spectrophotometric Investigations on Iron Oxide-containing Soda-Lime-Silica Glasses

Wang and Turner (Journal Society of Glass Technology, December, 1942) have conducted some spectrophotometric investigations on soda-lime-silica glasses which contain iron oxide and in Part I they discuss the influence of concentration and ferric-ferrous dissociation. A series of glasses previously used by Deusen and Turner were investigated with the apparatus described by Wang in the preceding Digest. The parent glass had the composition 75 per cent $SiO_2$, 10 per cent CaO, 15 per cent $Na_2O$ and iron oxide, from 0.002 to 12.5 per cent expressed as $Fe_2O_3$, was progressively introduced. At concentrations below 0.6 per cent of iron oxide a linear relation between absorption and degree of ferric oxide held approximately true within the range of dissociation of about 13-35 per cent. Extrapolation showed that the ferric iron at low concentrations contributes a greenish-yellow color, while ferrous iron gives the glass a blue color. At high concentrations the ferric iron exercised

(*Continued on page* 396)

## BATTELLE ANNOUNCES APPOINTMENT OF R. F. FERGUSON

Robert F. Ferguson, formerly associated with the Hazel-Atlas Glass Company, will join the technical staff of Battelle Memorial Institute where he will be engaged in research in the field of glass technology.

Mr. Ferguson, who is widely known in the ceramic field, is a graduate in chemistry of the University of Pittsburgh. Prior to his appointment at Battelle he had been with the Hazel-Atlas Glass Company for nine years. He also has held positions with the Carr-Lowrey Glass Company, Baltimore, and with the Mellon Institute, Pittsburgh. During World War I, he served in the Chemical Warfare Service and was stationed at the Development Division, Cleveland, Ohio.

Much of Mr. Ferguson's work has been in the fields of glass technology and ceramic refractories. He was instrumental in the development of many of the tests now adopted as standard for testing refractories and was one of the first to use statistical methods in evaluating routine data in ceramic research.

Mr. Ferguson has been a member of the American Ceramic Society since 1918 and has served on a number of its committees and held various local section offices. In his work with the Hazel-Atlas Glass Company, he assisted in the development of numerous contributions to the glass manufacturing art.

## NEW PROCESS FOR METAL PLATING OF GLASS

Glass, plastics or any non-conductor can now be perfectly plated with any of the plating metals by a new process announced by the Precision Paper Tube Company of Chicago, Illinois. By this new process the plating is said to go on the plastics as perfectly and as permanently as the best in any plated metal. Convex and concave surfaces, convolutions, corners and recesses are as thoroughly plated as flat or simple round surfaces. It does not crack, chip, nor peel off in long and severe service.

According to the Precision company the uses to which these metal plated plastics and glass are now being put are unavailable as the company's operation is under a Navy Secrecy Limitation order. However, it can be used for plating magnetic and electric shielding of all kinds—radio shielding, electrostatic and magnetic shielding, applications as coil shields, condensers, etc.

Under the Precision process a bond is obtained between metal and glass or plastics that is practically homogeneous. It will withstand unlimited impact without peeling or blistering, and indefinite cycles of heat and cold, to limits of the material itself. By this process critical and strategic metals are conserved; weight is saved; design is simplified; dimensional stability is insured; oils, solvents and moisture cannot be absorbed and electrolytic corrosion between dissimilar metals is eliminated.

Engineers of the Precision company have announced that they will be glad to counsel with manufacturers on applications of this new process to their products and extend an invitation to write for detailed information and estimates.

## FORMER HEAD OF PURDUE LABORATORY JOINS OWENS-CORNING FIBERGLAS CORP.

Dr. Ray B. Crepps, formerly director of Purdue University's materials testing laboratory, joined Owens-Corning Fiberglas Corporation on September 1 as director of the testing division of the company's research laboratories at Newark, Ohio. He will be in charge of a new testing laboratory to be completed in the fall.

Dr. Crepps will be responsible for all tests of Fiberglas materials, both in the developmental and finished product stages, under the direction of Games Slayter, vice president in charge of research. The testing laboratory, headed by Dr. Crepps will also continue its program of aiding users of Fiberglas materials in checking their performance and solving problems connected with their application.

Dr. Crepps was graduated from Purdue University and joined the engineering faculty after several years in the building construction field. He has been responsible for testing the performance and properties of many types of materials in his capacity as director of the university's materials testing laboratory.

Besides being head of the Purdue materials testing laboratory, Dr. Crepps is an associate professor of materials testing, an associate professor of civil engineering, and associate of the engineering experiment station.

## HUNTINGDON FIBERGLAS PLANT TO OPEN SOON—KEY PERSONNEL APPOINTED

Opening of its new plant at Huntingdon, Pennsylvania, within the next few weeks, and appointments to fill key positions in the new plant, are announced by Owens-Corning Fiberglas Corporation.

The Huntingdon plant will produce glass fiber textiles used in plane construction and for the insulation of airborne electrical equipment. Production will be nearly 100 per cent for war purposes. The plant was purchased by the Defense Plant Corporation and will be operated under lease to Owens-Corning.

Manager of the new Pennsylvania plant will be Marshall Burch, now superintendent of the company's Newark, Ohio, glass textile factory. John Saalfield, now of the company's Toledo general office staff, will be production superintendent. Walter Aikman, also of the Toledo general office staff, will be plant engineer.

Personnel director will be Alva B. Walton, now employment manager at the company's Newark, Ohio, factories. Other Huntingdon plant appointments from the Newark factories' personnel are: John R. Zirkle to be industrial engineer, Kenneth L. Sullivan to be service manager, Daniel R. Hunter to be purchasing agent, Robert R. Schenck to be product control supervisor.

C. R. Moore will be transferred from the company's Ashton, Rhode Island, plant to serve as accounting and budget supervisor.

## NELSON W. TAYLOR TO JOIN MINNESOTA MINING AND MANUFACTURING COMPANY

Dr. Nelson W. Taylor, Head, Department of Ceramics at The Pennsylvania State College, has resigned his position, effective November 1, to take charge of ceramic research for the Minnesota Mining and Manufacturing Co., at Saint Paul, Minnesota. This company has a large business in abrasives, glazed mineral roofing granules, Scotch tape, and other products.

Dr. Taylor has been connected with the Pennsylvania State College since 1933, coming from the University of Minnesota where he had been Assistant Professor of Physical Chemistry since 1925.

Dr. Taylor has published many technical papers and has acted as technical consultant to several companies on physico-chemical problems.

## AARON LYLE APPOINTED CHIEF CHEMIST AT HARTFORD-EMPIRE COMPANY

The promotion of Aaron K. Lyle to the position of Chief Chemist in the Hartford-Empire Company has recently been announced. He will take over many of the duties formerly held by Donald E. Sharp who has accepted a position with the Libbey-Owens-Ford Glass Company.

Mr. Lyle has been with the Hartford-Empire Company since 1937 as Glass Technologist actively directing research on new glasses, new methods of analyzing glasses and raw materials, and developments on batch charging.

He is a graduate of Washington and Jefferson College where he received his A.M. in 1928. He taught in the Chemistry Department of Washington and Jefferson until 1929 when he joined the Technical Staff of the Hazel-Atlas Glass Company. In 1934 he accepted a position as Chemist with the Bailey & Sharp Company, consulting glass technologists of Hamburg, New York. He held this position until he joined the staff of the Hartford Empire Company in 1937.

Mr. Lyle has published many scientific and technical papers in the field of glass technology. These deal with analytical methods, chemical durability, convection in melting furnaces and a new system of melting batch. He is also the inventor of new glasses, and improvements to melting units for which numerous patents have been granted. He is active in the American Ceramic Society, having been Chairman of the Glass Division, and is prominent in the Glass Committee of A.S.T.M.

## DONALD SHARP ELECTED TO RESEARCH POST AT L-O-F

Donald E. Sharp, formerly assistant to the Director of Research at Hartford Empire Company, has been appointed Assistant Director of Research for the Libbey-Owens-Ford Glass Company. Mr. Sharp is a widely known glass technologist, having had a varied experience in the glass industry over a period of thirty years.

Mr. Sharp attended the University of Wisconsin, Carnegie Institute of Technology and Alfred University, where he received a degree in Ceramic Engineering.

Mr. Sharp first began his experience in the glass industry when he started with the Corning Glass Works in 1914. In 1918 he became assistant in the Ceramic Department of the U. S. Bureau of Standards. After a brief period there he became associated with the optical glass plant of the Spencer Lens Company, Hamburg, New York, and was manager of the plant from 1921 to 1925. Later, Mr. Sharp purchased this plant and used it as headquarters for his practice as a consulting glass technologist, being joined by James Bailey in 1929, when the Bailey & Sharp Company was organized. Mr. Sharp became the president and general manager of the new firm.

In the summer of 1937, the activities of the Bailey & Sharp Company were discontinued, at which time Mr. Sharp became associated with Hartford-Empire and in 1941 he became Assistant to Dr. J. C. Hostetter, Vice-President and Director of Research of Hartford-Empire.

During the years he spent in Hamburg, N. Y., Mr. Sharp served numerous companies in this country and abroad as a representative and consultant on their glass problems, and was a director of a number of financial and industrial corporations. From 1930 to 1931 he was Associate Technical Editor of THE GLASS INDUSTRY.

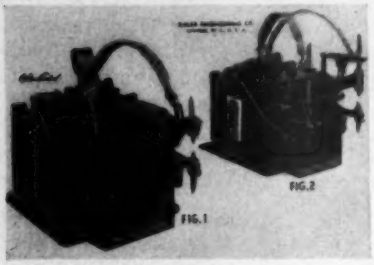
Mr. Sharp has been a member of the American Ceramic Society since 1917 and a Fellow since 1936. He was trustee of the Society from 1938 to 1941 and councillor of the Glass Division in 1923, and vice-chairman in 1931. He is a Fellow of the American Association for the Advancement of Science; a member of the American Chemical Society, American Optical Society, American Physical Society, and the Society of Glass Technology (British). He was a delegate to the International Congress on Glass held in London in 1936; one of the U. S. Fellows of the British Society of Glass Technology.

## DIAMOND ALKALI APPOINTS JARBOE

The appointment of M. L. Jarboe, formerly Secretary and Controller, to the position of Vice President in Charge of Finance and Accounts in addition to his duties as Secretary heads a new list of appointments released by the Diamond Alkali Company. Mr. Jarboe joined the Diamond Alkali organization in 1925 as Works Auditor. He was transferred to the general offices as Auditor of the Company in 1933.

# NEW EQUIPMENT AND SUPPLIES

## DUPLEX WELDER FOR LIGHT GAUGE AND WIRE




The Eisler Engineering Company has especially designed an easily operated new bench type resistance welding machine for efficient welding of light gauge sheet and wire.

Each unit consists of two independent small welding machines built together with one transformer and a rheostat for finer heat adjustment. Both are foot operated by means of two treadles and chains and made in sizes from ½ to 3-KVA. The transformer used in both types has five secondary tap connections providing five different heat positions.

The complete welding operation takes but a fraction of a second and a skillful operator on this machine will make from 120 to 175 clean welds per minute. The machines are built for single phase AC of 110, 220, or 440 volts, 25 to 40, 50 and 60 cycles. They are production machines, especially qualified for welding of radio tubes, incandescent lamps, intricate optical and jewelry parts, metal novelties, etc.

## MULTIVAL SYSTEM LUBRICATES ALL BEARINGS

Positive lubrication of all bearings on machine tools and similar equipment, regardless of location or condition of bearings, can be had through the improved Multival system made by the Farval Corporation of Cleveland, Ohio. Oil or grease under pressure is delivered to the distributing blocks by means of a manual or power-operated portable gun which serves as a central pump.

## LACQUER TRANSFERS REPRODUCE WOOD GRAINS

Application of the The Meyercord Co.'s Sans-Arb photo-lacquer re-creations of wood grains and Sans-Mart reproduction of marble have achieved colorful and distinctive effects on glass top coffee and occasional tables for the home. Unusual glass wall treatments, picture frames and mirrors are also being reproduced with these durable lacquer transfers.

## OIL RECLAIMER FOR SMALL PLANTS

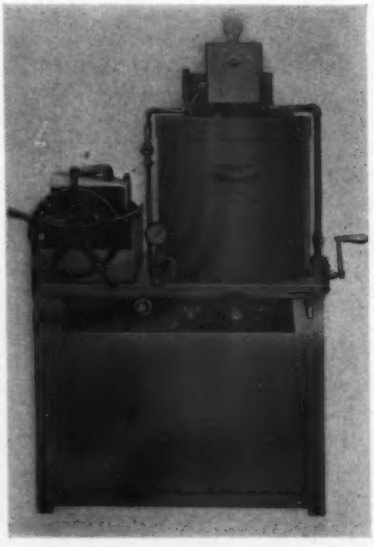
A new small capacity lubricating oil reclaimer which can handle a limited quantity of waste lubricating oils drained from equipment used in manufacturing processes is now being manufactured by the Youngstown Miller Company, Sandusky, Ohio. It is also designed for small plants and organizations having their own fleet of trucks and motor cars.

With a capacity for purifying eight gallons of dirty oil in 70 to 90 minutes this Youngstown Miller Model A-8 Oil Reclaimer will handle 2500 gallons of waste lubricating oil per year when operated only once a day. It is pointed out that based on average prices for the new oil, the reclamation of this quantity will generally enable the machine to pay for itself in six to twelve months.

This machine has a two-stage filter press, is semi-automatic, operating under thermostatic control, and utilizes common refinery earths available on the open market. The man operating the machine can do so incident to his regular work.

For handling larger quantities of lubricating or hydraulic oils, this company builds these units in seven other sizes. All models are designed to restore used oils to substantially the same values of fire, flash, viscosity, color, neutralization number, precipitation number as the new parent oil.

These machines can reclaim oils from diesel engines, aircraft engines, hydraulic machines, ice machines, vacuum pumps, gasoline engines and similar installations.



## ROTA-SIGHT INDICATES AMOUNT OF FLOW RATE

The "Rota-Sight" which indicates the amount of flow rate passing through a line has been released by the Fischer & Porter Company, Hatboro, Pennsylvania. It has an indicating float which moves up and down in a pyrex tube in direct proportion to the amount of flow.

Instantaneous response to flow change is obtained by the uniquely designed Pyrex tube into which triangular V-ported flutes are formed. As a result, a variable area meter is obtained giving a wide range over a short scale length.

The "Rota-Sight" may be equipped with an alarm which is a positive and inexpensive device for visible or audible protection against dangerously low or high flows. This action is accomplished by means of a magnetic float extension which trips a magnetic switch to operate the alarm circuit.

## CATALOGS RECEIVED

*Acheson Colloids Corporation, Fort Huron, Michigan.* A 4-page illustrated bulletin, No. 431-MM on "dag" colloidal graphite for impregnation and surface coatings has just been released by the Acheson Colloids Corporation. It contains a detailed discussion of the impregnating capacity of colloidal graphite dispersions, etc.

*Dings Magnetic Separator Company, Milwaukee, Wisconsin.* This company has released a new 40-page handbook on the operation and maintenance of magnetic pulleys to help industry secure maximum performance from this type of equipment. While specifically devoted to pulleys, much of the information is applicable to other types of separators.

*General Electric Company, Schenectady, N. Y.* A non-technical book entitled "How Electronic Tubes Work" has been issued by General Electric Company for industrial engineers. Illustrated with 117 sketches and photographs, the book contains 24 pages describing the eight basic types of industrial electronic tubes and their uses.

**CATALOG & BULLETIN SERVICE**

*Current catalogs and manufacturers' service bulletins reviewed in this department may be obtained by writing to THE GLASS INDUSTRY.*

(*Continued from page* 382)

fore[3] that there had been "an unlooked-for increase in logging in the Canadian woods." Yet eighteen days later, the same Administrator ordered a reduction in production. On May 28, the Administrator resigned and his successor still further cut production.

In justice to Canada, however, one must remember that newsprint is one of that country's major industries. Canada faces the same labor problems that we do. Her pulp is needed for the manufacture of munitions, as well as for newsprint. Groundwood pulp sells at perhaps $20 a ton less than newsprint, hence should Canada divert pulp from her newsprint mills, at least two things would happen: her revenue from taxes would be sharply curtailed; her source of foreign exchange would be importantly impaired. Also, Canada has her eye on postwar markets. She exports considerable pulp and newsprint paper, and she does not wish to jeopardize her foreign markets.

It is evident from the foregoing that to increase the supply of virgin wood pulp, serious problems must be solved. The most fundamental of these — manpower, prices and international relationships — lie at the very roots of national policy. Consequently, the strategists in charge of our vital resources are not pinning all their hopes on a million ton increase in the supply of wood pulp. They are giving serious attention to another partial solution—the conservation of the existing supply. Conservation may take the form of salvaging waste paper, reuse of containers, and eliminating unnecessary uses.

**2. Waste Container Board must be Salvaged.** In normal times, the paper industry depends upon a recovery of perhaps 30 per cent of used paper for the production of new stock. Reduced a second time to fibrous form, this can be combined with virgin wood fibre to stretch the tonnage which the latter will provide. The present times, however, are not normal. It is estimated that 25 per cent of all fibreboard containers are sent overseas and never get back home. Another important loss occurs from the changes that have taken place in the domestic economy. Consumers go shopping less frequently, and they carry home most of their purchases. Certain types of retail stores, retail grocers, for example, have been providing customers with discarded fibre boxes with which to carry home their purchases. Since the farther a box gets from its primary source, the more difficult it becomes to salvage, practically all fibre boxes that end up in consumer hands, whether they were originally made for shipping glass containers, tableware or utility kitchen ware, are permanently lost.

When speaking of waste, however, one must be careful to make distinctions both in the type of waste and in the uses to which each type may be put in new paper production. For the manufacture of container board, only long fibre scrap is usable. The long fibre papers include old fibre shipping boxes and the kraft or brown type wrapping papers or bags. Other types of paper waste—newspapers, folding cartons, display board, shoe boxes and the like, are short fibre paper. This waste is valuable for some paper making processes, but adds very little to the production of fibreboard for shipping containers.

Obviously, then, the reclamation of paper begins with it a sorting problem. Paper destined for new fibreboard production must be segregated; old fibre boxes must not be permitted to get mixed up with other forms of waste paper. That is one reason why fibre boxes that reach the consumer are lost to the paper board mills—municipal waste collecting agencies are geared to waste disposal and not to salvage. There is no means of sorting the various grades of paper the dump carts collect.

That same sorting problem proved to be the undoing of the 1941 salvage campaign. Thousands of tons of unsorted waste was shipped to the pulp mills. Much of it was unusable. A great deal was unsorted. And the mills are too short of labor to do their own sorting.

A tremendously worthwhile job can be accomplished if all distributors, department stores, packers, jobbers will salvage their paperboard scrap. Fibrous scrap is usable. It is badly needed. Every ton recovered adds definitely to the total amount of containers that will be available for use this year and in 1944.

**3. The Reuse of Shipping Containers.** A great deal of thought has been given to the possibility of reusing corrugated and fibre shipping containers. Obviously, if this could be done, an equivalent amount of new container manufacture would be unnecessary. Moreover, in the case of manufacturers of glass packed products the idea is particularly appealing since the savings are directly reflected in an increased supply to him. THE GLASS INDUSTRY has consulted a number of large users in several industries in the glass packaging field. It concludes that the plan is not feasible on an industry-wide basis, but that certain manufacturers are well geared to do it. Broadly, the criterion of the successful application of such a plan is the control which the packer retains over the shipping carton at the time it is emptied, and the existence of retail points of large consumption. The H. J. Heinz Co., Merck & Co., Inc., Vick Chemical Co., most of the liquor industry, have set-ups where the reuse of containers can be successful, wholly or in part.

The two basic difficulties are (1) opening the carton without its destruction; (2) recovery of the carton, which can be effected when the packer has direct distributing contact with the user.

Practically all are in agreement that the methods by which cartons are sealed preclude their opening without destruction of the cover. With the flaps glued down, the accustomed way to open them is by running a knife around the perimeter of the cover—which cuts off the two top flaps and makes the carton of no further use. Theoretically, the retailer might be educated in time to a different method of opening. Practically, he is far too short-handed to bother with a salvage job in which he is only indirectly interested.

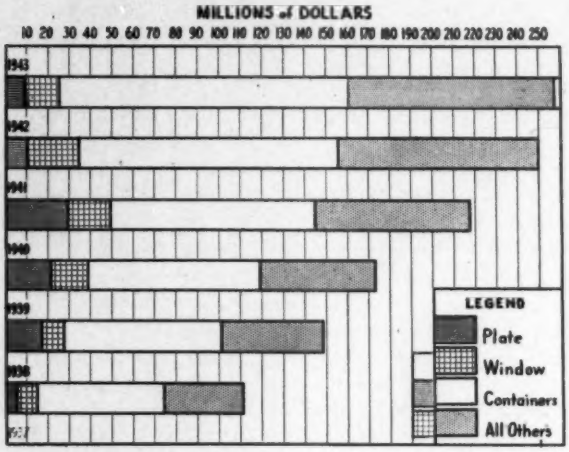
There are at least two notable exceptions to this school of thought: Heinz and Schenley. Heinz has always salvaged a percentage of its containers from the institutional trade; in fact, offers a premium for returned bottles and cartons. It must be noted, however, that Heinz has a huge army of salesmen and maintains direct contact with its retail outlets. It thus has the means of educating its retailers to both the need and to a method

(*Continued on page* 394)

# CURRENT STATISTICAL POSITION OF GLASS

## GI THE GLASS INDUSTRY'S INDEX

**Production: Six Months, January Through June**




During June activity in the glass industry continued on the same high level as last month's with production, employment and payrolls well above the previous year. According to the June GLASS INDUSTRY Production Index, output totalled $44,000,000 as compared with $40,000,000 in June 1942; the first six months of this year glass production amounted to $257,000,000 or 3 per cent above last year's corresponding total.

**Plate glass** production during July totalled 6,415,534 square feet. This was 9 per cent higher than the previous month's volume and was 53 per cent higher than the July 1942 level. During the first seven months of this year plate glass output amounted to 36,356,892 square feet or 6 per cent less than last year's corresponding figure.

**Window glass** production during July totalled 1,096,458 boxes which represented 67.5 per cent of the industry capacity. This was one per cent greater than the previous month's total and 13 per cent less than the July 1942 volume. The cumulative total for the January-July period was reported to be 7,650,669 boxes or 26 per cent lower than last year.

**Glass container** production during July totalled 7,684,754 gross according to the Glass Container Association of America. This represented a decline of slightly over one per cent from the previous month but an increase of 30 per cent over July 1942. During the first seven months of 1943 a total of 52,777,259 gross were produced—13 per cent more than in 1942's comparable period.

Shipments of glass containers during July amounted to 7,616,019 gross which was a 20 per cent increase over July 1942 but a slight decrease from last month's total. Compared with July 1942, beer bottles dropped 32 per cent, liquor ware, 24 per cent, jelly glasses, 17 per cent, milk bottles, 15 per cent and pressed food ware, 13 per cent; increases were reported for domestic fruit jars (up 87 per cent), general purpose ware (up 85 per cent), narrow neck food containers (up 73 per cent), medicinal and toilet ware (up 39 per cent), and pressure and non-pressure ware (up 26 per cent). During the first seven months of this year shipments increased 20 per cent over last year to 54,828,946 gross. Largest increases were reported for domestic fruit jars, 223 per cent; general purpose ware, 49 per cent, wide mouth food bottles and wares, 41 per cent; domestic jelly glasses, 34 per cent, and narrow neck food containers, 34 per cent. Slight decreases were shown in pressed food ware (13 per cent), liquor ware (12 per cent), and in milk bottles (9 per cent).

Inventories of glass containers in the hands of manufacturers on July 31, 1943, totalled 4,845,344 gross, or 49 per cent lower than last year's corresponding figure. All ware showed heavy decreases from July 1942.

**Automatic tumbler** production during July amounted to 4,800,169 dozens, a 23 per cent increase over last year's corresponding figure. During the first seven months of this year this output amounted to 31,455,214

## CURRENT GLASS CONTAINER PRODUCTION

(ALL FIGURES ARE GROSS)

| | *Production* | | *Shipments* | | *Stocks* | |
|---|---|---|---|---|---|---|
| | *July, 1943* | *July, 1942* | *July, 1943* | *July, 1942* | *July, 1943* | *July, 1942* |
| Food Containers (Narrow Neck, Wide Mouth and Pressed Ware) | 2,615,665 | 1,996,537 | 2,652,145 | 2,000,299 | 1,379,017 | 2,517,126 |
| Pressure and Non-Pressure Ware | 593,767 | 350,277 | 561,964 | 416,049 | 289,308 | 388,821 |
| Beer Bottles | 587,652 | 836,728 | 569,508 | 838,901 | 109,693 | 411,557 |
| Liquor Ware | 704,979 | 707,662 | 675,812 | 853,061 | 576,015 | 1,449,469 |
| Medicine and Toilet Ware | 1,912,791 | 1,285,735 | 1,889,589 | 1,378,972 | 1,673,031 | 3,223,884 |
| General Purpose Ware | 625,616 | 335,369 | 614,021 | 328,331 | 413,343 | 629,917 |
| Milk Bottles | 251,242 | 283,716 | 250,668 | 295,320 | 319,490 | 350,152 |
| Fruit and Jelly Jars | 354,005 | 129,934 | 358,633 | 194,881 | 57,070 | 518,877 |
| All Other | 39,037 | 23,328 | 43,679 | 30,013 | 28,377 | 38,343 |
| Total Industry | 7,684,754 | 5,949,286 | 7,616,019 | 6,335,827 | 4,845,344 | 9,528,146 |

dozens, a one per cent increase over 1942's total. Shipments of automatic tumblers during July totalled 4,835,339 dozens or a 24 per cent increase over the figure reported in July of 1942. Total shipments from January to July of 1943 were reported to be 32,601,857 dozens or approximately 11 per cent more than last year's volume. Stocks on hand at the end of July amounted to 8,231,503 dozens.

**Table, kitchen and household glassware:** Manufacturers' sales of machine-made table, kitchen and household glassware were reported at 2,691,927 dozens for July, a slight increase over last year's comparable figure.

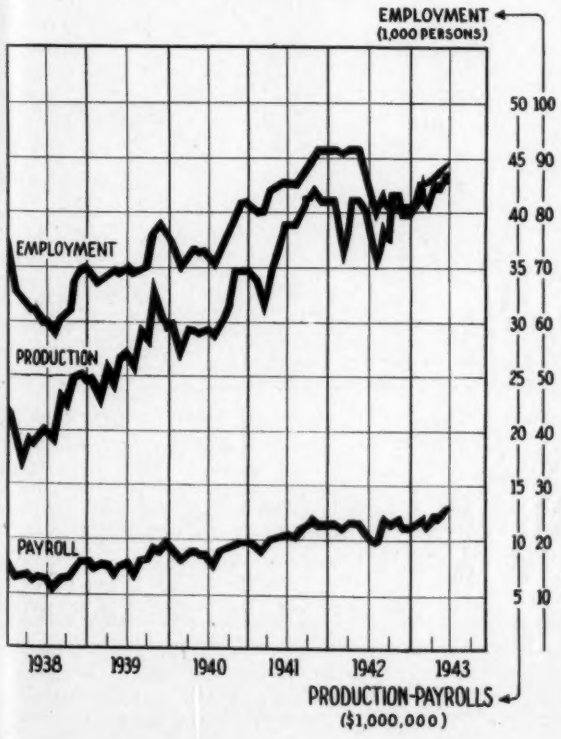
**Miscellaneous glass products** manufactured in June are estimated at $16,000,000. This figure was the same for last month. During the first 6 months of 1943 miscellaneous glass products amounted to $96,000,000.

**Employment and Payrolls:** Employment in the glass industry during June amounted to 88,500 persons as compared to 87,000 persons in May and 85,000 persons in June 1942.

Payrolls in June were estimated at $13,000,000 the same figure as reported for May but an increase of $1,500,000 over last year's comparable figure. During the first six months of 1943 glass manufacturers paid out about $86,500,000.

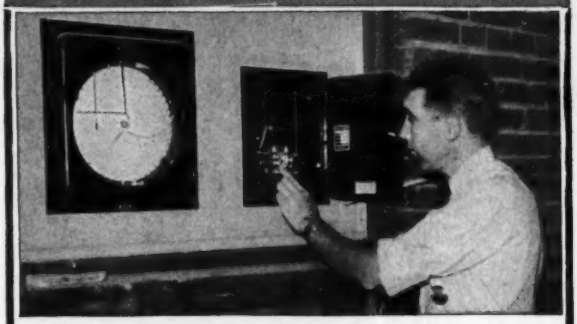
## GI THE GLASS INDUSTRY'S INDEX

**Monthly Trends Through June, 1943**





HOW TRENTON POTTERIES WHIPPED A TOUGH FIRING CONTROL PROBLEM



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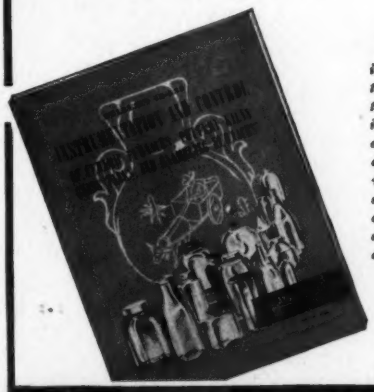
Hays Equipment for the Ceramic Industry includes a full line of measuring, indicating and recording instruments, gages and meters, and complete systems of Automatic Combustion Control.



*How these precision instruments can save time and money, materials and man-power in ceramic plants of every description, is described in Bulletin 42-552. Glad to send a copy on request—costs nothing, contains data worth a great deal.*

The HAYS CORPORATION
COMBUSTION INSTRUMENTS
MICHIGAN CITY, INDIANA, U.S.A.

(*Continued from page* 391)

of salvage, and it has a delivery system for recovering the empty containers.

Schenley Distillers Corporation apparently is another advocate of reuse. Back in 1941 the farsighted chairman of its Board, Lewis S. Rosenstiel, anticipated just what is occurring now. In a pamphlet which he published at that time, Mr. Rosenstiel advocated the reuse, among other things, of shipping containers for the entire distilled spirits industry, as a means of conservation. Quoting from this pamphlet: "At the present time [1941] the distilled spirits industry uses annually approximately 45,000,000 to 50,000,000 paperboard cases. These cases are made out of: kraftboard made from wood pulp; chip board made from straw and waste paper; gummed cloth tape. Our engineers have devised a plan, which we think will be acceptable to the railroads, whereby the cases may be used over again. . . . It is believed that, by cooperation on this plan, as much as 40 per cent of the annual consumption would be saved. The cases might be usable two or three times."

**Allocation of the Existing Supply**

Whether or not the efforts to increase the supply of virgin wood pulp are successful; whether or not the salvage and reuse campaigns achieve their purpose, neither method can achieve results immediately. And the shortage of fibre and corrugated shipping containers is a present actuality affecting third-quarter operations throughout the country. So, to insure an adequate supply to essential industries, the Government is considering allocating containers. As we stated at the beginning of this article, no plans have been made as yet. However, the nature of the problem can be gleaned from the accompanying table, which shows the uses into which the limited supply of pulpwood is converted. Newsprint, wrapping paper, book and other printing apers are the largest non-container uses.

The job of coordinating all these elements of conservation has been given to Harold W. Boeschenstein, whose years of experience in the glass manufacturing industry will at least assure glassmen that their problems will be fully understood.

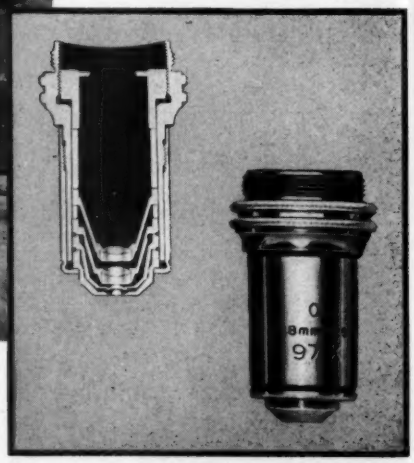
[1]From the *Survey of Current Business* December, 1942.
[2]*Survey of Current Business,* July 1943.
[3]*The New Republic,* August 2, 1943.

## DIAMOND ALKALI ANNOUNCES NEW APPOINTMENTS

The appointment of Arch H. Copeland and John Berdan as Assistant Directors of Sales has been announced by the Diamond Alkali Company.

Mr. Copeland has been affiliated with the Diamond Alkali Company and its subsidiary companies as an Executive Assistant for a number of years. Mr. Berdan has been associated with the company since 1931.

Announcement was also made of the appointment of J. D. Mattern as Manager of Alkali Sales covering the sale of the company's principal heavy chemical products—Soda Ash, Caustic Soda and Bicarbonate of Soda. Mr. Mattern has been a member of the Diamond Alkali sales staff since 1922.



# Accuracy That Counts on All Fronts

● At first glance there would seem to be little relationship between an intricate, ten-foot long height finder and a microscope objective with lenses of less than one millimeter in radius. Yet both are the products of the same eyes, the same facilities, the same standards of accuracy, the same experience. Both are aiding in America's war effort. Both are products of Bausch & Lomb.

The lens computing and grinding skills that for years have produced the minute, exceedingly accurate lens components of the microscope objective are today also being employed in the production of height-finders and gunfire control instruments that are helping America's armed forces to win an earlier Victory.

This quantity production of precision optical instruments, pioneered and fostered by Bausch & Lomb through years of peace, has become a highly valued asset to an America at war. Here again, because of its wartime accomplishments, Bausch & Lomb will be able to extend its optical services to peacetime pursuits when Victory is won.

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**INVENTIONS . . .**

(*Continued from page* 386)

the block sections are reheated before joining, the thin ribs quickly rise to a higher temperature than the main body of the element so that there is less danger of deforming the main wall sections.

The Westinghouse patent 2,324,385 granted to D. S. Gustin and H. K. Richardson of Bloomfield, N. J. describes a machine and method for making molded glass stems for fluorescent lamps and similar electrical devices.

Patent 2,324,411 issued to Wm. J. Miller of Swissvale, Pa. and Lewis P. Reese of Scio, Ohio, for a machine for decorating round pottery and glassware will be of particular interest because of Mr. Miller's numerous inventions which have been applied to the mechanizing of chinaware processes.

### Sheet and Plate Glass

Hideo Yamamoto of Yokohama, Japan, suggests in APC 245,285 that waviness in vertically drawn sheet may be diminished by so designing the coolers (just above the drawing point) as to provide the greatest cooling at the edges of the sheet. This is accomplished by reducing the cross sectional area at the center of the cooling boxes which extend across both sides of the sheet, or by bowing them so that the distance from cooler to sheet is greater in the center. Yamamoto reports that this gives a more uniform stress distribution than when the coolers have uniform breadth or when they are intentionally enlarged to give the most intensive cooling in the center.

A machine for surface grinding and polishing glass is described in APC 395,384 applied for by David Bezborodko and Charles Zucker of Nice, France. The longitudinal motion of the table holding the work and the transverse motion of the rotating grinding wheels combine to give a mosaic pattern of grinding.

Karl E. Sommerfeld of Pittsburgh assigned to Sommerfeld Machine Co. his patent 2,323,686 for an automatic glass cutting machine.

### Glass Wool and Fiber

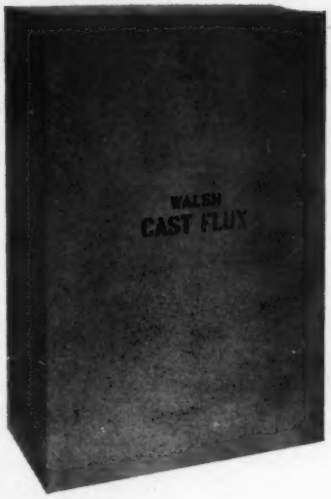
Allen L. Simison of Owens-Corning Fiberglas Corp., Newark, Ohio has received another patent, 2,323,684, for coatings which can be applied to glass fibers drawn into a strand preparatory to being twisted into yarns. A fully satisfactory coating material should prevent individual fibers from fraying from the yarn. The patent covers the use of wax. An ideal wax would have a melting point of 150 to 170 degrees F. and when sprayed molten onto the fibers as they are drawn should solidify in less than a fifth of a second.

Patent 2,324,140 issued to Nicholas Dobak and E. R. Powell of Johns-Manville Corp. covers the design of a nozzle for blowing mineral wool.

---

• News has been received of the promotion of John McCormick of the Preston Laboratories from Captain to Major on July 19. Major McCormick is stationed in Hawaii where he has been on active service for two and one-half years.


# WALSH CAST-FLUX

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Phone ATlantic 1195

**RESEARCH DIGEST . . .**

(*Continued from page* 387)

a high absorption, particularly in the blue-violet end of the visible spectrum, thus resulting in a brown or pale brown color. This high absorption component is sensitive to heat treatment.

These results indicate that attempts to formulate a theory of the decolorizing of glass from deductions based upon glasses containing other than small amounts of iron are in admissable.

These spectrophotometric investigations are to be continued and in a later communication the absorption of soda-lime-silica glasses containing iron oxide in conjunction with constituents normally added in decolorizing process will be discussed.

---

**HANSON JOINS DIAMOND GLASS COMPANY**

J. R. Hanson, formerly Assistant to the General Manager at the Hartford-Empire Company, has been appointed Vice-President in Charge of Production for the Diamond Glass Company, Royersford, Pennsylvania, and he assumed his new duties on July 12.

Mr. Hanson is a graduate of Purdue University where he studied mechanical engineering. For several years after graduation he was employed by the U. S. Rubber Company becoming Personnel Director of the Naugatuck, Conn., branch.

In 1933 he went to the Hartford-Empire Company as a Mold Designer, and became interested in developing productive controls for the glass industry. He was instrumental in developing and organizing the Industrial Engineering Department which handles all phases of glass container management problems.

---

**WANTED:** Expert mechanic to supervise operations of automatic machine forming of glass tubing. Knowledge of fires helpful. Give full experience, salary desired and draft status. Box 70, The Glass Industry, New York 18, N. Y.

---

**WANTED:** Machinery for production beveling of glass circles from 1½" to 3½" dia. and ⅛" to 3/16" thick. New or used. Best prices paid. Box 72, The Glass Industry, 55 W. 42nd St., New York 18, N. Y.

---

**WANTED:** Superintendent for Bottle Factory in South America. Must be familiar with H.E. equipment. State experience and expected salary for at least one year's contract. Box 67, The Glass Industry, 55 West 42nd St., New York 18, N. Y.

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THE SHARP-SCHURTZ COMPANY

CHEMISTS AND CONSULTING ENGINEERS

FOR THE GLASS INDUSTRY

LANCASTER, OHIO U. S. A.

(*Continued from page* 379)

glassware for commercial use would have to increase about $9 million and those for household purposes should expand $12 million.

It is difficult to appraise future trends in the restaurant and hotel trade but, as "Markets After the War" indicates, if American people spend the same proportion of their incomes on transportation and recreation in the postwar period that they spent in the prewar period, travel would increase about 77 per cent and 42 per cent more money would be spent on recreation. Obviously, these percentages are the result of pure mechanical computations but they indicate a fairly reasonable trend. Surely we can say that if people have more money they will spend more on travel and recreation, which will mean more eating out and, therefore, probably more glassware use.

A $12-million expansion in the household glassware market seems quite possible; boiled down to a family problem it means that the average annual family expenditure in the postwar era would increase from $1.56 to $1.76, or 20 cents more per year. These figures seem to indicate the reasonableness of this postwar goal; surely they at least merit careful analysis and study on the part of manufacturers and dealers.

As in the case of pottery, it seems that we will face a supply problem in the glassware industry if the demand reaches these indicated volumes, since in 1941 glassware manufacturers operated at very close to capacity. In any event, careful study should be given problems of expanding production facilities, training workers, and assuring a sufficient supply of raw materials.

From the over-all standpoint, the glassware industry does not face as serious a problem in foreign competition as the pottery industry does. In the prewar period sales of imported ware amounted to from 6 to 9 per cent of the total consumption of all glassware; by 1941, largely owing to the European war, this ratio had dropped to 1 per cent. This situation does not obtain, however, in all types of glassware, for while manufacturers of machine-made products experienced practically no foreign competition in prewar years, imports of *hand-made* table glassware represented 22 per cent of the total (hand-blown and hand-pressed) sales in 1937, and 19 per cent in 1938. Actually, this problem was almost entirely confined to the *hand-blown* glassware field since most of the imported ware was of this type. Probably 30 per cent of the total sales of hand-blown glassware prior to the European war consisted of foreign-made articles. It is important, therefore, that any study of the postwar glassware market include a careful analysis of the international glass situation. If we assume that the 1939 ratio of imports to consumption will be maintained in the postwar period, sales of American-made glassware at our target level would amount to $110 million rather than to $115 million based on the 1941 ratio of imports to total sales; in other words, sales of American hand-made glassware producers might be $5 million less.

No one can say with assurance that we will achieve

(*Continued on page* 399)

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**for**
**The Glass Industries**
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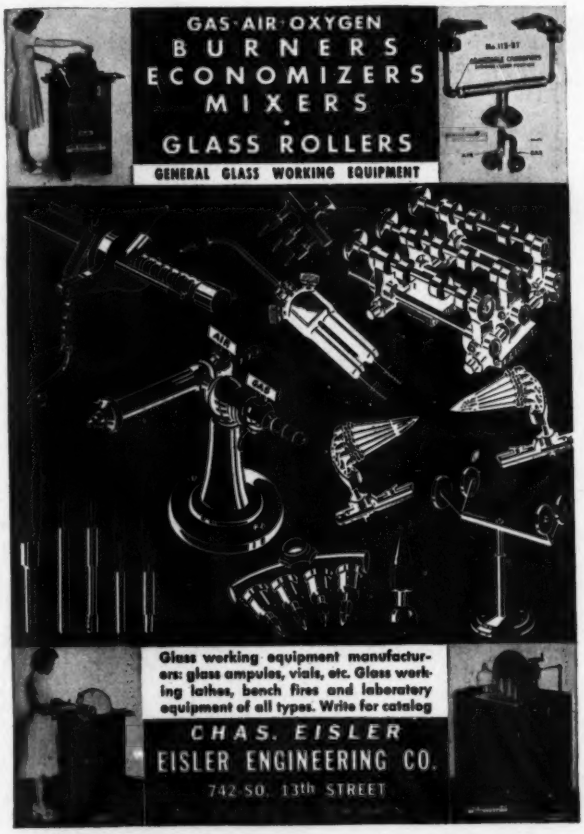
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*For Screw Products*
**OMCO PRODUCTS CORPORATION**
Springfield, Ohio

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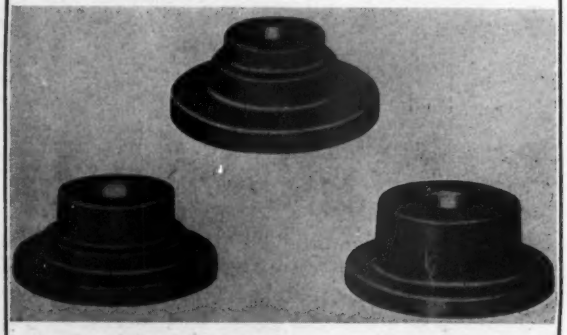
## Gunite's Standard grade A for Guide Rings



Like all Gunite glasshouse castings Standard grade A is used for guide rings because it is best adapted to this particular purpose.

There is a suitable Gunite Alloy for every type of glass mould part requirement. Miller plungers and guide rings, neck ring sticks, brushing stock, press and blow moulds.

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(*Continued from page* 397)

high levels of employment in the postwar period and that we can, therefore, use that yardstick in analyzing postwar markets for particular products, such as glassware. But if glass manufacturers and dealers share our acceptance of the likelihood of high postwar employment levels they should be heartened by the realization that over a period of years American consumers have been spending an increasing portion of their incomes on glassware items. If the industry can maintain its position in this regard, it should be able to face the future unafraid. The detailed implications of these inter-relations of high levels of employment and glassware trends merit careful study.

In this brief discussion, we have not mentioned the export market potentialities, which may be quite large, nor have we discussed wartime technological developments in the glass industry which may improve its competitive position with similar products made of other materials, nor have we attempted to review the new materials and products which will compete with glass for the postwar consumer's dollar. All of these subjects must be included in any detailed survey of the postwar glassware situation.

As was stated in the beginning, this review of the pottery and glassware situation is intended to stimulate postwar thinking and planning on the part of pottery and glassware producers and dealers so that they may contribute their share toward achieving a common goal of high levels of employment in the postwar period. The implications of such a situation are obviously encouraging, suggesting potential demands far in excess of our past experiences. All of us concerned with this problem, however, must constantly bear in mind that there is nothing automatic or inevitable about this postwar period. As "Markets After the War" warns, "This is a challenge to business enterprise. Can the whole gamut of goods and services be made so attractive and can they be sold so effectively that the consumer will be willing to work about the same number of hours as in 1940 to obtain them? This calls for better market analysis, more sales research, more imagination and ingenuity in developing new products or new markets for old ones, and more strenuous efforts to improve promotion and distribution methods."

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### RALPH STUART TO HEAD LAMP DIVISION OF WESTINGHOUSE

Ralph C. Stuart was recently appointed manager of the Lamp Division of the Westinghouse Electric and Manufacturing Company in Bloomfield, New Jersey.

Mr. Stuart, who has been with the Westinghouse Electric and Manufacturing Company and the Canadian Westinghouse Company for 25 years, will have charge of all activities of the Lamp Division in its five plants in New Jersey and West Virginia.

A graduate from Oak Ridge Institute, Kernersville, N. C., Mr. Stuart joined Westinghouse at the Bloomfield Works in 1918 as an assistant foreman. In 1920 he was transferred to the Canadian Westinghouse Company in Hamilton, Ontario. Soon after he became manager of the Hamilton Lamp Plant in 1930, organizing two foundries, a radio tube plant and a lighting fixture plant.


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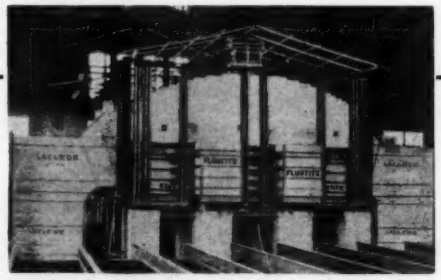

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